Development and Dissemination of High-Resolution National Climate Change Dataset

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A new project funded by the NCCWSC is bringing together a team of USGS and academic researchers to develop a comprehensive web-based dataset of high-resolution (or 'downscaled') climate change projections, enabling scientists and decision-makers to better assess climate related ecosystem impacts. Currently, scientists and resource managers often find it difficult to use downscaled climate projections because of the multiple methodologies used to produce them and the time-consuming process required to obtain model output. In response, the research team will implement a three-part plan to provide high resolution climate data for the impact modeling community. First, a database will be developed of up-to-date and state-of-the-art downscaled climate projections for the U.S., using a range of plausible future greenhouse gas emission scenarios. Second, a series of workshops will be held to solicit input about climate-related data needs and to discuss best practices for accessing and using downscaled climate projections. Finally, downscaled projections will be made available as an enterprise-level web-based source. Users will be able to freely access the data via an interactive, easily manageable interface, in formats which are familiar to ecosystem and impact modelers. The climate dataset will be generated by applying advanced statistical downscaling methods to a comprehensive selection of global climate model simulations from the IPCC AR4 database, with the capability of rapidly updating results as new climate model output becomes available. The workshops will involve key stakeholders from the NCCWSC modeling community and decision-makers and managers from USGS and our partnering DOI agencies such as FWS and NPS.

This new project will: (1) allow for consistent impact assessments at the scale of the most critical ecosystem processes through downscaling projections of daily temperature and precipitation across the continental U.S.; (2) enable scientists and managers to easily access, manipulate and download data relevant to modeling climate change impacts on ecosystems through a common web-based data portal; and (3) explore ways to reduce redundant efforts to obtain and produce downscaled climate projections by soliciting feedback from the NCCWSC research community. Most importantly, the proposed work will enable impact assessments to be based on the same common data set, allowing researchers and resource managers to compare results and projections across regions and ecosystems. This work is a collaborative effort between scientists and researchers at USGS, USGS Cooperative Research Units Program, North Carolina State University, and Texas Tech University.